(A) Radar navigation—determining the position and direction of movements of a vessel.

(B) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(C) Determining the course and speed of another vessel.

(D) Determining the time and distance of closest point of approach of a crossing, meeting, overtaking , or overtaken vessel.

(E) Detecting changes of course and/or speed of another vessel after its initial course and speed have been established.

(F) Factors to consider when determining changes of course and/or speed of a vessel to, on the basis of radar observation, prevent collisions with other vessels.

(ii) Plotting (by any method that is graphically correct):

(A) The principles and methods of plotting relative and true motion.

(B) Practical-plotting problems.

(5) Radar Observer (Inland Waters Renewal). Classroom instruction—including demonstration and practical exercises using simulators—and examination, in the interpretation and analysis of radar information, including:

(i) Radar navigation—determining the position and direction of movements of a vessel.

(ii) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(iii) Determining the course and speed of another vessel.

(iv) Determining the time and distance of closest point of approach of a crossing, meeting, overtaking, or overtaken vessel.

(v) Detecting changes of course and/or speed of another vessel after its initial course and speed have been established.

(vi) Factors to consider when determining changes of course and/or speed of a vessel to, on the basis of radar observation, prevent collisions with other vessels.

(6) Radar Observer (Rivers Renewal). Classroom instruction—including demonstration and practical exercises using simulators—and examination, in the interpretation and analysis of radar information, including:

(i) Radar navigation—determining the position and direction of movements of a vessel.

(ii) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(iii) Factors to consider when determining changes of course and/or speed of vessel to, on the basis of radar observation, prevent collisons with other vessels.

[CGD 94–041, 59 FR 53757, Oct. 26, 1994]

§ 10.306 Radar-Operation certificate and course.

(a) A certificate of training from a Radar-Operation course may, as provided by 46 CFR 15.815(c)(2), suffice instead of a radar-observer endorsement. It is valid until the holder's license is renewed or upgraded, or expires, whichever occurs first.

(b) Each Radar-Operation course must contain at least four hours of instruction on the following subjects:

(1) Fundamentals of radar:

(i) How radar works.

(ii) Factors affecting the performance and accuracy of marine radar.

(iii) Purpose and functions of the main components that constitute a typical marine radar system.

(2) Operation and use of radar:

(i) Purpose and adjustment of controls.

(ii) Detection of malfunctions, false and indirect echoes, and other radar phenomena.

(iii) Effects of sea return and weather.

(iv) Limitations of radar resulting from design factors.

(v) Precautions to observe in performing maintenance of radar equipment.

(vi) Measurement of ranges and bearings.

(vii) Effect of size, shape, composition, and distance of vessels and terrestrial targets on echo.

(3) Interpretation and analysis of radar information:

(i) Radar navigation—determining the position and direction of movements of a vessel.

(ii) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(iii) Factors to consider when determining changes of course and/or speed of a vessel to, on the basis of radar observation, prevent collisions with other vessels.

(c) Each Radar-Operation course must be conducted by an individual who possesses the knowledge and skills taught in the course, with at least one year of experience in their practical application, except that—

(1) A marine instructor or company official may substitute a currently valid certificate from an approved Radar-Observer (Unlimited or Inland Waters) course for the one year of experience; and

(2) An instructor of any approved radar-observer course may teach a Radar-Operation course without further seagoing experience.

(d) A holder of the Radar-Operation certificate seeking a radar-observer endorsement is considered an applicant for an original endorsement rather than an applicant for renewal of the endorsement.

[CGD 94–041, 59 FR 53758, Oct. 26, 1994]

§ 10.307 Training schools with approved radar observer courses.

The Director, National Maritime Center, NMC–4B, 4200 Wilson Boulevard, Suite 510, Arlington, VA 22203–1804 maintains the list of approved schools and specific courses. This information is available upon request by writing the aforementioned address or calling (703) 235–1300.

[CGD 81–059, 52 FR 38623, Oct. 16, 1987 and CGD 81–059, 54 FR 132, Jan. 4, 1989, as amended by CGD 95–072, 60 FR 50460, Sept. 29, 1995]

Subpart D—Professional Requirements for Deck Officers Licenses

§ 10.401 Ocean and near coastal licenses.

(a) Any license issued for service as master or mate on ocean waters qualifies the licensee to serve in the same grade on any waters, subject to the limitations of the license, without additional endorsement.

(b) A license issued for service as master or mate on near coastal waters qualifies the licensee to serve in the same grade on near coastal, Great Lakes, and inland waters, subject to the limitations of the license, without additional endorsement.

(c) Near coastal licenses of any gross tons require the same number of years of service as the ocean unlimited licenses. The primary differences in these licenses are the nature of the service and the professional examination as explained in subpart I of this part.

(d) A licensee having a master or mate near coastal license obtained with ocean service may have the license endorsed for ocean service by completing the appropriate examination deficiencies, provided that the additional service requirements of paragraph (e) of this section do not apply.

(e) Master or third mate near coastal unlimited licenses may be obtained by completing the prescribed examination in subpart I of this part and satisfying the requirements of paragraph (g) while holding a license as unlimited master or mate, respectively, upon Great Lakes and inland waters. To have a near coastal unlimited license obtained in this manner endorsed for ocean service, the licensee must obtain 12 months of service as a deck watch officer or higher on ocean waters on vessels of 1600 gross tons or over, in addition to completing the examination topics.

(f) Masters and mates licenses for service on vessels of over 200 gross tons may be endorsed for sail or auxiliary sail as appropriate. The applicant must present the equivalent total qualifying service required for conventional licenses including at least one year of deck experience on that specific type of vessel. For example, for a license as master of vessels of not more than 1600 gross tons endorsed for auxiliary sail, the applicant must meet the total experience requirements for the conventional license, including time as mate, and the proper tonnage experience, including at least one year of deck service on appropriately sized auxiliary sail vessels. For license endorsement